

SMART BLIND WALKING STICK

A PROJECT REPORT

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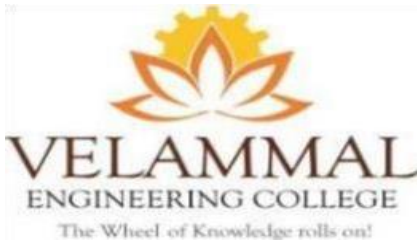
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of

BACHELOR OF ENGINEERING

in

ELECTRICAL AND ELECTRONICS ENGINEERING



VELAMMAL ENGINEERING COLLEGE, CHENNAI

ANNA UNIVERSITY: CHENNAI 600 025

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BONAFIDE CERTIFICATE

Certified that this project report “**SMART BLIND WALKING STICK**” is the bonafide work of “**R.ANBARASAN and M.SETHUPATHI**”, who carried out the project work under my supervision.

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The report of the project work submitted by the above students in partial fulfillment for the award of Bachelor of Engineering degree in ELECTRICAL AND ELECTRONICS ENGINEERING Of Anna University was confirmed to be report of the work done by the above students and then evaluated.

INTERNAL EXAMINER

EXTERNAL EXAMINER

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ABSTRACT

The project describes ultrasonic blind walking stick with the use of arduino according to who, 30 million people are permanently blind and 285 billion peoples with vision impairment. If you notice them, you can very well know about it they can't walk without the help of other. One has to ask guidance to reach their destination. They have to face more struggles in their life daily life. Using this blind stick, A person can walk more confidently. This stick detects the object in front of the person and give response to the user either by vibrating or through command. So, the person can walk without any fear. This device will be best solution to overcome their difficulties.

CHAPTER 1

INTRODUCTION

Visually impaired persons have difficulty to interact and feel their environment. They have little contact with surroundings. Physical movement is a challenge for visually impaired persons, because it can become tricky to distinguish obstacles appearing in front of them, and they are not able to move from one place to another. They depend on their families for mobility and financial supports. Their mobility opposes them from interacting with people and social activities. In the past, different systems are designed with limitations without a solid understanding of the nonvisual perception. Researchers have spent the decades to develop an intelligent and smart stick to assist and alert visually impaired persons from obstacles and give information about their location. Over the last decades, research has been conducted for new devices to design a good and reliable system for visually impaired persons to detect obstacles and warn them at danger places, smart walking stick is specially designed to detect obstacles which may help the blind to navigate care-free. The stick measures the distance between the objects and smart walking stick by using an ultrasonic sensor. When any objects or obstacles come in range of an ultrasonic sensor and it make buzzer sound and blind man stand any water surface the transistor make buzzer sound.

CHAPTER 2

In this chapter, the detailed discussion of the circuit connection and block diagram is explained. The figure 2.1 shows the of connection of the proposed model.

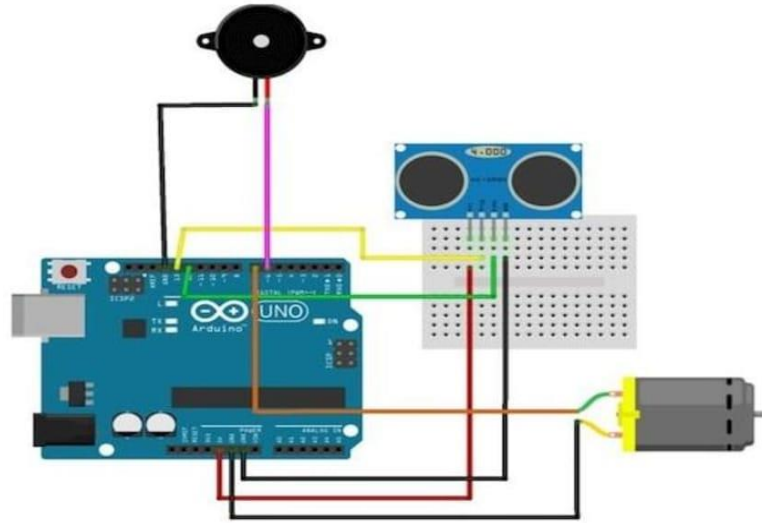
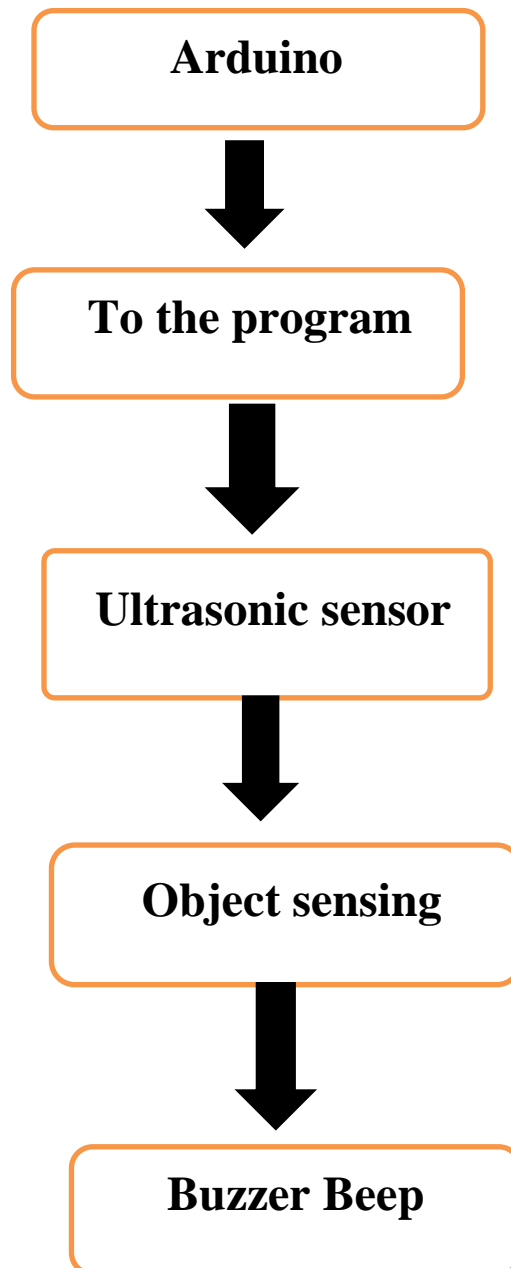


Figure 2.1 Circuit Connection

2.1 Block Diagram:

Figure 2.2 describes the detailed working of smart BLIND WALKING STICK block diagram.



2.3 HARDWARE USED:

2.3.1. ARDUINO UNO:

The Arduino Uno is a micro controller board based on the AT mega328P shown in figure 2.3. It has 14 digital input / output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack.



Figure 2.3 Arduino Board

2.3.2. ULTRASONIC SENSOR

Figure 2.4 shows the ultrasonic sensor HC-SR04 module is used to sense and locate the distance between the dustbin and the object.



Figure 2.4 Ultrasonic sensor

2.3.3 LITHIUM ION BATTERY

A 3.7V Lithium ion battery is used to drive the components such as buzzer, transistor, arduino and ultrasonic sensors used.

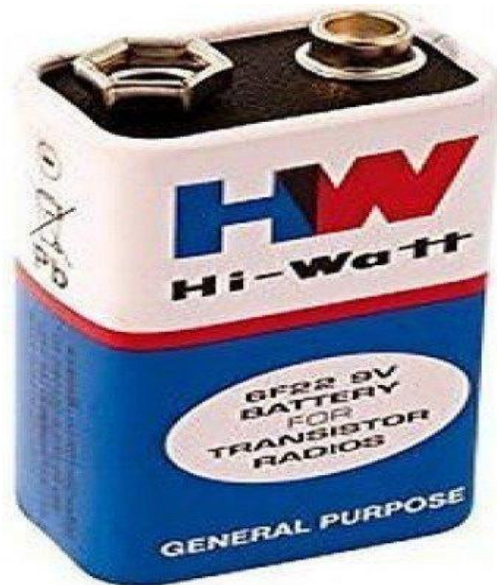


Figure 2.5 lithium ion battery

CHAPTER 3

SOFTWARE

3.1 SOFTWARE USED

3.1.1 ARDUINO UNO

The application programmed is developed using Arduino IDE and Processing software.

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open source software. This software can be used with any Arduino board.

3.1.2 BUZZER

Small buzzer is a common feature in electronic products and provide an effective way of interacting with users or raising an alarm. Depending on the type and strength of the signals available to drive the buzzer, the physical space available, and the required audio sound pressure level (spl), a magnetic or piezoelectric type will be the most common options for your application. One also has the choice between an indicator or transducer design.



Figure 3.1 Buzzer

3.1.3 TRANSISTOR

The 2N3904 is an extremely popular NPN transistor that is used as a simple electronic switch or amplifier that can handle 200 AM(Absolute Maximum) and frequencies as high as 100MHz when used as an amplifier.

The 2N3904 (NPN) and 2N3906 (PNP) are complementary transistor pairs. These transistor are available in package styles TO-92, SOT23, SOT223.

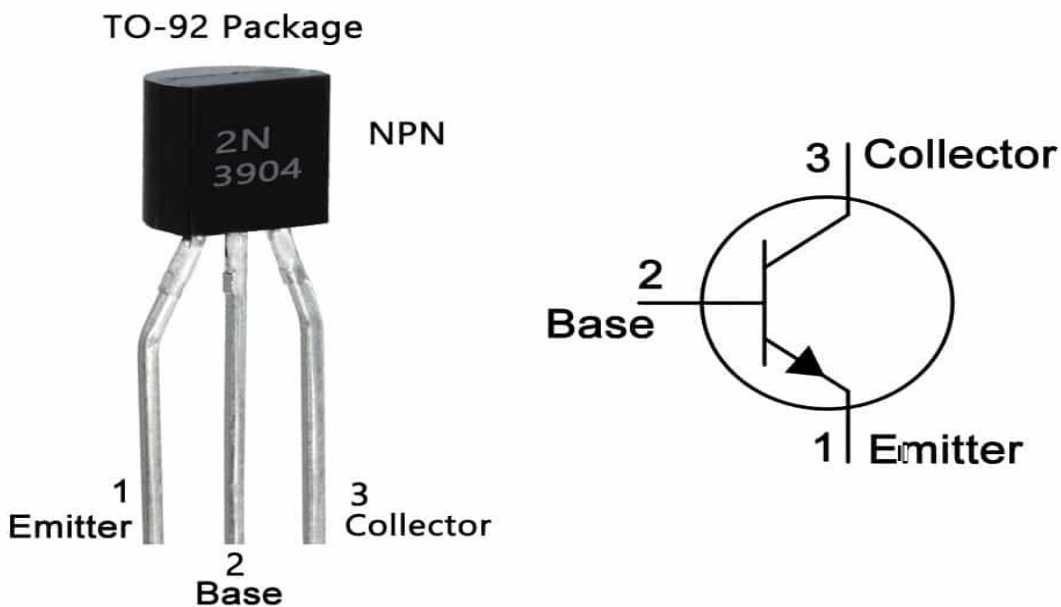


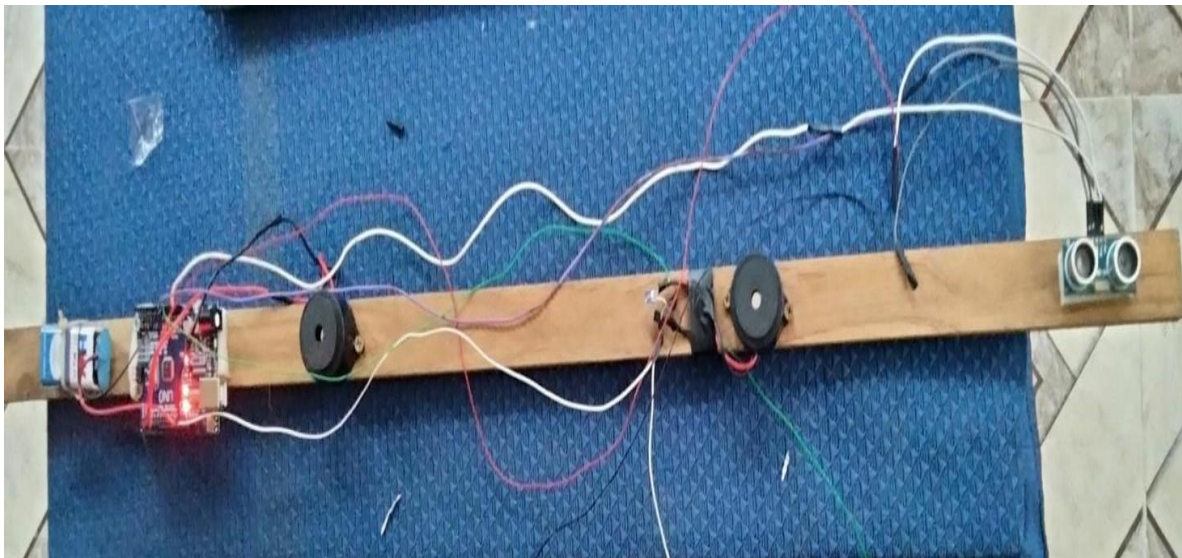
Figure 3.2 Transistor

CHAPTER 4

RESULTS AND DISCUSSION

The smart walking stick constructed with that most accuracy, will help the blind people to move from one place to another without others help. This could also be considered a crude way of giving the blind a sense of vision. This stick reduces the dependency of visually impaired people on other family members, friends and guide dogs while walking around. The smart stick detects objects or obstacles in front of users and feeds warning back in form of indicators making buzzer sound. Also the help of remote they can find the stick easily in indoor. The advantage of the system lies in the fact that it can prove to be a low cost solution to millions of blind persons world wide.

PROTOTYPE MODEL



ARDUINO CODE

Arduino code: (Programming Code)

```
// https://www.youtube.com/channel/UCaXI2PcsTIH5g0et67kdD6g //
```

```
// Smart Stick for Blind peoples //
```

```
// By MOHD SOHAIL //
```

```
const int trigPin = 3;
```

```
const int echoPin = 2;
```

```
const int buzzer = 5;
```

```
const int motorPin = 6;
```

```
long duration;
```

```
int distance;
```

```
int safetyDistance;
```

```
void setup() {
```

```
  pinMode(trigPin, OUTPUT);
```

```
  pinMode(echoPin, INPUT);
```

```
  pinMode(buzzer, OUTPUT);
```

```
  pinMode(motorPin, OUTPUT);
```

```
  Serial.begin(9600);
```

```
}
```



```

void loop() {
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
  duration = pulseIn(echoPin, HIGH);
  distance= duration*0.034/2;

  safetyDistance = distance;
  if (safetyDistance <= 30){
    digitalWrite(buzzer, HIGH);
    digitalWrite(motorPin, HIGH);
  }
  else{
    digitalWrite(buzzer, LOW);
    digitalWrite(motorPin, LOW);
  }
  Serial.print("Distance: ");
  Serial.println(distance);
}

```

REFERENCE

RELATED ARTICLES

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- Corona Protected automatic doorbell.
- Make The World's Smallest Laptop For Hacking and Everything else.
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